

What is claimed is:

1. A switched coupler type digital phase shifter, comprising:

5 a coupling means for receiving one input signal and generating a first signal and a second signal having 180 degree phase difference based on the received input signal;

10 a quadrature signal generation means for generating a third signal to a sixth signal having 90 degree phase difference to each other based on the first signal and the second signal outputted from the coupling means; and

15 a switching means for selectively outputting one of the third signal to the sixth signal outputted from the quadrature signal generation means in response to a control signal.

2. The switched coupler type digital phase shifter as recited in claim 1, wherein the coupling means includes an active balanced-to-unbalanced (balun).

20 3. The switched coupler type digital phase shifter as recited in claim 1, wherein the coupling means includes a passive balanced-to-unbalanced (balun).

25 4. The switched coupler type digital phase shifter as recited in claim 1, wherein the switching means includes a SP4T switch implemented by using a circuit of transistor

and diode or a micro electron mechanical (MEM) device.

5. The switched coupler type digital phase shifter as recited in claim 1, wherein the quadrature signal generation
5 means includes a poly-phase filter.

6. A multi-bit digital phase shifter, comprising:
a controller for generating control signals
a digital phase shifter for receiving an input signal
10 and the control signals from the controller and generating a first phase shifted signal having 45 degree phase difference comparing to the input signal base on the control signals; and
a switched coupler type digital phase shifter for receiving the first phase shifted signals from a digital phase shifter and the control signal from the controller and generating a second phase shifted signal having 90 degree phase difference comparing to the first phase shifted signal,

20 wherein the switched coupler type digital phase shifter includes:

a coupling means for receiving the first phase shifted signal and generating a first signal and a second signal having 180 degree phase difference based on the received input signal;

a quadrature signal generation means for generating a third signal to a sixth signal having

90 degree phase difference to each other based on the first signal and the second signal outputted from the coupling means; and

5 a switching means for selectively outputting one of the third signal to the sixth signal outputted from the quadrature signal generation means as the second phase shifted signal in response to a control signals.

10 7. A multi-bit digital phase shifter, comprising:
 a controller for generating a control signals;
 a switched coupler type digital phase shifter for receiving an input signal and the control signal from the controller and generating a first phase shifted signal
15 based on the control signals,

 wherein the switched coupler type digital phase shifter includes:

20 a coupling means for receiving the input signal and generating a first signal and a second signal having 180 degree phase difference based on the received input signal;

25 a quadrature signal generation means for generating a third signal to a sixth signal having 90 degree phase difference to each other based on the first signal and the second signal outputted from the coupling means; and

 a switching means for selectively outputting

one of the third signal to the sixth signal outputted from the quadrate signal generation means as the first phase shifted signal in response to a control signals; and

5 a digital phase shifter for receiving the first phase shifted signal from the switched coupler type digital phase shifter and the control signals from the controller and generating a second phase shifted signal having 45 degree phase difference comparing to the first phase shifted
10 signal base on the control signals.